

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

PROPOSED

Title V, Construction / Operating

Permit: V-08-015 R1

Equitable Gathering, LLC

Dwale, Floyd, KY 41621

November 10, 2008

Durga Patil, Reviewer

SOURCE ID:	21-071-00138
AGENCY INTEREST:	44058
ACTIVITY:	APE20080003

PROPOSED MODIFICATIONS V-08-015 R1:

On July 16, 2008, the Division for Air Quality received an application for the construction and operation of new units, at the existing natural gas compression station in Dwale, Kentucky (Dwale Station). An addendum to the application was received on August 15, 2008 regarding the temporary compressor engine presently at the facility. The proposed modifications at the facility will consist of the continued operation of the temporary natural gas-fired compressor (U05) of capacity 1,265 brake horsepower (bhp) with no restriction on the hours of operation; and the construction and operation of one triethylene glycol (TEG) dehydration unit (U08) controlled with a flare operating at a maximum of 37.5 million standard cubic feet per day, with an associated reboiler (U09) of capacity 1.0 million British thermal units per hour (mmBtu/hr), one natural gas fired emergency generator (U10) having maximum capacity of 690 horsepower to be operated up to a maximum of 500 hours annually, one 8,820 gallon condensate storage tank and two 4,200 gallon compressor oil storage tanks.

SOURCE DESCRIPTION:

For permit V-08-015, the Dwale Station consisted of the following emission units:

- Two natural gas-fired Cooper-Bessemer compressor engines (U01 and U02), each installed in 1968 and having a maximum power output capacity of 2,000 horsepower (hp);
- One TulPro dehydration unit (U03), installed in 1994 and having a maximum natural gas flowrate of 26 mmscfd. The emissions from this unit are controlled by a flare;
- One natural gas-fired reboiler (U04), having a maximum heat input capacity of 1.25 mmBtu/hr;
- Tank #1, storing pipeline condensate and having a maximum capacity of 8,820 gallons;
- Tanks #2 and #3, storing used oil and having a maximum capacity of 1,000 and 1,025 gallons, respectively;
- Tank #4, storing compressed lube oil and having a maximum capacity of 2,000 gallons;
- Tank #5, storing triethylene glycol and having a maximum capacity of 1,550 gallons;
- Tank #6, storing diesel and having a maximum capacity of 100 gallons;
- Tanks #7 and #8, storing antifreeze and having a maximum capacity of 1,000 and 1,100 gallons, respectively;
- Tank #9 4,200 gallon condensate storage tank; and

- One natural gas-fired emergency generator, having a maximum power output capacity of 80 hp.

The facility also has one temporary natural gas-fired compressor (U05) of capacity 1,265 brake horsepower (bhp), one temporary triethylene glycol (TEG-U06) dehydration unit operating at a maximum of 10 million standard cubic feet per day; with an associated reboiler (U07) of capacity 0.275 million British thermal units per hour (mmBtu/hr). To show compliance with volatile organic compounds (VOC) and nitrogen oxides (NO_x) emission limits to preclude applicability of prevention of significant deterioration of air quality (PSD) regulations for a significant net emissions increase, permit V-08-015 stipulated that the permittee will not operate these units longer than 945 hours and shall keep records of operating hours for the temporary units. The facility will remove from operation the temporary dehydrator prior to the start-up of the new permanent dehydrator.

The existing Dwale Station compresses natural gas as it is being shipped via pipeline. Natural gas enters the station via a distribution pipeline system and is first compressed using two (2) natural gas-fired compressors, identified as Units U01 and U02. The compressed natural gas stream is then processed through the existing TEG dehydration unit (U03). The dehydration unit filters the natural gas and separates excess water using a distillation process in which heat is provided to the dehydration unit column by a natural gas-fired reboiler (U04) rated at 1.25 mmBtu/hr. The natural gas stream from the dehydration unit is then reintroduced into the pipeline to be transported further along the distribution system. Liquid fractions removed from the natural gas via dehydration are stored in small storage tanks at the station. A process flow diagram, showing the relationship between each of the emission units described above, is included in Figure 1.

The modification will consist of routing the compressed natural gas stream from compressor U05 (temporary unit identified in V-08-015) to the dehydration unit U03 to remove any excess water in the natural gas. The maximum potential natural gas processing from U03 will remain at 26 mmscf/day even after routing of the stream from compressor U05. The feed to the new Natco dehydration unit (U08) will be the compressed natural gas from two 3000 hp electrical compressors identified in Figure 2.

The Dwale Station is currently operating under proposed Title V Permit No. V-08-015, issued on June 2, 2008. Since the Dwale Station will be subject to new specific operating and emission limitations, a revised Title V permit is being issued for this facility.

Figure 1. Dwale Station Process Flows (existing for V-08-015)

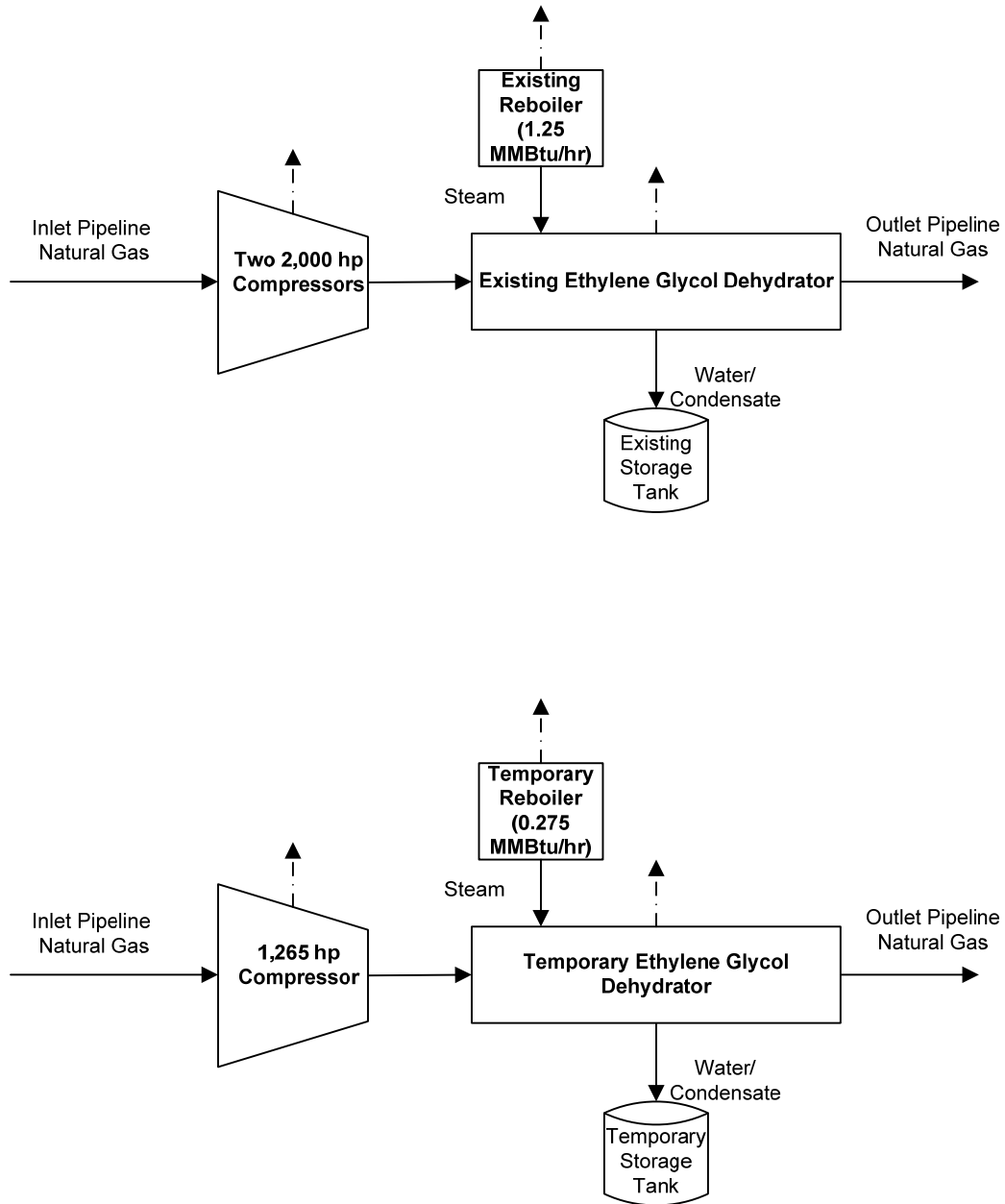
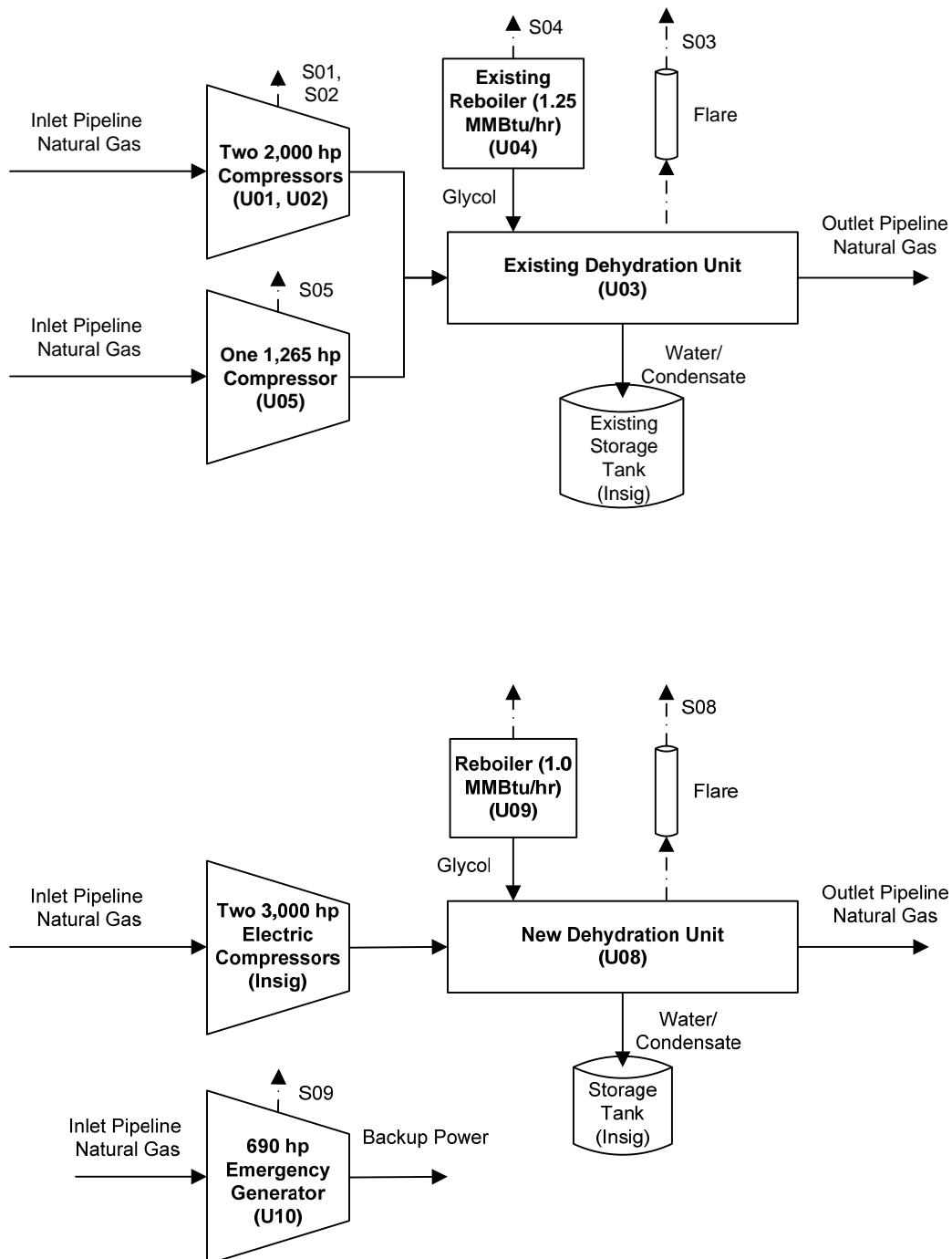


Figure 2. Dwale Station Process Flows (with present modification in V-08-015 R1)



Natural gas compressor stations are not on the list of 28 Prevention of Significant Deterioration (PSD) source categories defined at 401 KAR 51:001, Section 1 (120)(a)(1)(b) for which the major source threshold is 100 tpy. Floyd County is classified as an attainment area for all criteria pollutants. The potential emissions of nitrogen oxides (NO_x) at the existing station, unconstrained, are greater than 250 tpy. Therefore, the facility is currently classified as a major PSD source. The increase in potential emissions of each criteria pollutant, including volatile organic compounds (VOC) and NO_x, from the proposed modification will be less than PSD significant emission rate increase thresholds. Thus, the proposed construction will be classified as a minor modification under the PSD program and will not be subject to PSD requirements.

In addition, the Dwale Station controls VOC and hazardous air pollutant (HAP) emissions from the existing dehydration unit using a flare. The source-wide controlled emissions of HAPs are less than 10 tons per year (tpy) of an individual HAP and 25 tpy of total HAPs. The HAP emissions will continue to be less than major source thresholds after the proposed modification. HAP emission limits of 9 tpy of an individual HAP and 22.5 tpy of total HAPs are also included in the permit.

TYPE OF CONTROL AND EFFICIENCY:

The Dwale Station has one flare that controls emissions from the existing TulPro dehydration unit. The design efficiency of the flare is at least 98% and it operates in compliance with the applicable provisions specified in 401 KAR 63:015, Flares. The flare will not be modified as part of the proposed modification at the Dwale Station. A second flare will control emissions from the proposed NATCO dehydration unit. The design efficiency of this flare will be at least 95% and it will operate in compliance with the applicable provisions specified in 401 KAR 63:015, Flares.

EMISSIONS DOCUMENTATION:

Emission factors for the compression engines were mainly obtained from AP-42 and those supplied by the manufacturer.

Potential emissions from the reboilers are calculated using U.S. EPA's AP-42 factors for natural gas combustion equipment.

Potential VOC and HAP emissions from the dehydration units are estimated using GRI-GLYCalc Version 4.0.

In addition to VOC and HAP emissions from the dehydration units, a negligible amount of emissions will result from the on-site storage tanks that are classified as insignificant activities.

APPLICABLE REGULATIONS:

The permittee is subject to:

40 CFR 63 Subpart HH, *National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities* as incorporated by reference in 401 KAR 63:002.

- Based on the fact that the existing dehydration unit (U03) does not operate without a flare, the benzene emissions are less than 0.99 tpy.
- The new dehydration unit (U08) will operate with a different flare at all times and so benzene emissions will be less than 0.99 tpy.

Hence the two dehydration units are exempt from the requirements in 40 CFR 63 Subpart HH, except for the recordkeeping requirements for benzene emissions. The permittee shall determine and keep records of average benzene emissions from each of the two dehydrator units pursuant to 40 CFR 63.772(b)(2) and 63.774(d)(1)(ii).

40 CFR 63 Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, applies to stationary RICE located at major or area sources of HAPs.

- Pursuant to 40 CFR 63.6590(b)(3), existing four stroke lean burn stationary RICE and existing emergency stationary RICE do not have to meet the requirements of NESHAP Subparts ZZZZ and A. Moreover, no initial notification is necessary for these existing units. Therefore, existing Cooper-Bessemer engines (U01 and U02) and the emergency generator will not be subject this rule. No initial notification is necessary.
- Pursuant to 40 CFR 63.6590(c), a new emergency RICE at an area source of HAP must comply with the applicable requirements of 40 CFR 60 Subpart IIII or JJJJ to demonstrate compliance with Subpart ZZZZ. The emergency generator (U10) is a spark ignition engine that would be subject to NSPS Subpart JJJJ, but it will be installed before the applicability date for the manufacture of emergency generators of January 1, 2009. Therefore, there are no applicable requirements for the MACT for this emission unit.
- Pursuant to 40 CFR 63.6590(a)(2)(iii), the regulation applies to engine U05 since it was installed after June 12, 2006. However, pursuant to 40 CFR 63.6665, the new RICE located at an area source does not need to comply with any of the requirements of the general provisions. There are no applicable requirements for the MACT for the area sources.

401 KAR 59:015, *New Indirect Heat Exchangers*

- This applies to the existing reboiler (U04) since its heat capacity is greater than the rule applicability threshold of 1 mmBtu/hr. The allowable particulate matter (PM) emissions will not exceed 0.56 lb/mmBtu. The visible emissions from the existing reboiler shall not have opacity greater than 20%. The allowable sulfur dioxide (SO₂) emissions will not exceed 3.0 lb/mmBtu. Compliance with the PM and SO₂ emission limits is demonstrated based on the emission factors in lb/mmBtu being less than the allowable for burning natural gas. Compliance with the opacity emission limit will be demonstrated by the reboiler burning only natural gas.
- This regulation does not apply to the new reboiler (U09) in this modification which will have an input heat capacity of 1 mmBtu/hr or less, which is less than the applicability threshold.

401 KAR 63:015, Flares

Since the flare at the Dwale Station was constructed after the rule applicability date of April 9, 1972, the permittee shall be subject to the provisions of this rule. Pursuant to 401 KAR 63:015 Section 3, the opacity of visible emissions from the flare stack will not exceed 20% for more than 3 minutes in any one day. Since only inlet and residue natural gas vapors will be combusted in the flare, the permittee will be in compliance with the opacity emissions standard at all times.

REGULATIONS NOT APPLICABLE:

40 CFR 64, Compliance Assurance Monitoring

The existing compressors will each have potential pre-control device emissions of NO_x greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. Similarly, the existing TulPro dehydration unit will have potential pre-control device emissions of VOC greater than 100 tpy. However, the existing compressors are not subject to an emission limitation for NO_x and therefore will not be subject to the CAM rule pursuant to 40 CFR 64.2 (a). The dehydration units are subject to 40 CFR 63 subpart HH. Therefore, pursuant to 40 CFR 64.2(b), these units will not be subject to the CAM rule.

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality

The Dwale Station is located in Floyd County that is attainment for all criteria pollutants. The major source threshold for any regulated pollutants under the PSD program for the facility is 250 tpy as it is not on the list of 28 PSD source categories defined under 401 KAR 51:001. The potential emissions of NO_x at the existing facility, unconstrained, are greater than 250 tpy. Thus, the facility is classified as a major source under the PSD program. The potential non-fugitive emissions increase of PM/PM₁₀, VOC, CO, and NO_x will be 0.035, 19.28, 2.89 and 33.11 tpy, respectively based on the operation of the flare at all times for the new dehydration unit; which is less than the significant emissions increase of 25/10, 40, 100 and 40 tpy for the pollutants respectively. Therefore, this permit action is not subject to PSD requirements.

40 CFR 63 Subpart HHH – Natural Gas Transmission and Storage Facilities

Pursuant to 40 CFR 63.1270, NESHAP Subpart HHH applies to natural gas transmission and storage facilities that are major sources of HAP as defined in 40 CFR 63.2. The Dwale Station will continue to be a minor source of HAPs; therefore, the requirements of this subpart will not apply to the station.

40 CFR 60 Subpart IIII – NSPS for Stationary Compression Ignition Internal Combustion Engines

Pursuant to 40 CFR 60.4200, NSPS Subpart IIII applies to compression ignition internal combustion engines: 1) with a model year of 2007 or later, 2) constructed after July 11, 2005 and manufactured after April 1, 2006, or 3) modified or reconstructed after July 11, 2005.

- It does not apply to the compressor U05 because the engine was originally manufactured in 1999 and is not a compression ignition internal combustion engine.
- It does not apply to the emergency generator to be installed in late 2008 as it is a spark ignition engine and not a compression ignition engine.

40 CFR 60 Subpart JJJJ – NSPS for Stationary Spark Ignition Internal Combustion Engines

This subpart is applicable to manufacturers, owners, and operators of new stationary spark ignition internal combustion engines manufactured after July 1, 2007.

- It does not apply to existing compressor units U01 and U02 because these two compressor engines were installed in 1968, which is before the applicability dates for this rule.
- It does not apply to the compressor engine U05 because the engine was originally manufactured in 1999 and no modifications have been made.
- It does not apply to the emergency generator (U10) to be installed in late 2008, which is before the applicability date for emergency engines under this rule (Jan. 2009).

40 CFR 60, Subparts K, Ka, and Kb, NSPS for Storage Vessels for Petroleum Liquids/Volatile Organic Liquids

These subparts apply to storage tanks of certain sizes constructed, reconstructed, or modified during various time periods. Subpart K applies to storage tanks constructed, reconstructed, or modified prior to 1978 and Subpart Ka to those constructed, reconstructed, or modified prior to 1984.

- All existing storage tanks were constructed before July 23, 1984; Subpart Kb will not apply to the existing storage tanks. Subparts K and Ka will not apply to the existing tanks because each tank has capacity less than 40,000 gallons (applicability threshold for both Subparts K and Ka).
- The three new storage tanks at the Dwale Station will be constructed after these dates; therefore, the requirements of Subparts K and Ka will not apply. Subpart Kb applies to volatile organic liquid (VOL) storage tanks constructed, reconstructed, or modified after July 23, 1984 with a capacity equal to or greater than 75 m³ (~19,813 gallons). These storage tanks will not have a capacity greater than 75 m³. Therefore, Subpart Kb will not apply to the storage tanks.

401 KAR 59:050, New Storage Vessels for Petroleum Liquids

401 KAR 59:050 applies to the following: 1) Petroleum liquid storage tank with capacity less than 40,000 gallons and commenced on or after April 9, 1972 and prior to July 24, 1984; or 2) Petroleum liquid storage tank with capacity less than 10,567 gallons and greater than 580 gallons commenced on or after July 24, 1984, which is located in a nonattainment county for ozone or in any other county and is part of major source of VOC. Dwale Station is a minor source for VOC and Floyd county is classified as an attainment county for ozone. Therefore, 401 KAR 59:050 will not apply to the petroleum liquid storage tanks at this station.

401 KAR 61:050, Existing Storage Vessels for Petroleum Liquids

401 KAR 61:050 applies to each existing storage vessel for petroleum liquids which has a storage capacity of greater than 2,195 liters (580 gallons), constructed before April 9, 1972, and which is located in a nonattainment county for ozone. Since Floyd County is attainment for all criteria pollutants, 401 KAR 61:050 will not apply to the existing petroleum liquid storage tanks at this station.

401 KAR 51:150, NO_x Requirements for Stationary Internal Combustion Engines

No engine at the Dwale Station is identified as a large NO_x SIP call engine in the NO_x SIP call engine inventory prepared by the Division. This determination was made based NO_x emissions calculated to be less than 1 tpd during the average ozone season (May through September) in 1997.

EMISSION AND OPERATING CAPS DESCRIPTION:

The permittee shall comply with source-wide annual individual HAP emission and combined HAPs emissions limitations of 9.0 tons and 22.5 tons per rolling 12-month period.

In order to preclude the applicability of 401 KAR 51:017, for a significant emissions increase of VOC, the flare must be operated at all times that the proposed dehydration unit is in operation.

PERIODIC MONITORING:

Emission testing protocol, test data and results determining PM, VOC and HAP emissions identified in the application are to be maintained on site for the life of the source. These tests shall be evaluated every five years for applicability and accuracy.

The actual average benzene emissions from the dehydration units will be monitored and be maintained less than 0.9 megagrams per year for each unit. A monthly log of the visible emissions check along with any record of Method 22 testing performed for the flare shall be maintained. Records of this data, with all deviations from permit requirements clearly identified, will be submitted to the Division semiannually. The maximum velocity and maximum net heating value of the gas being combusted in the flare shall be determined annually and testing started within 180 days of issuance of the final permit V-08-015 R1.

Monthly reports generated from the above logs may be used to demonstrate compliance with the annual emissions. Monthly summary reports and logs shall be submitted to the Division semiannually to demonstrate compliance and upon request.

OPERATIONAL FLEXIBILITY:

None

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.